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NPIC/P&DS/102-65
12 March 1965

MEMORANDUM FOR: Chief, Procurement Division, OL

THROUGH : Chief, Support Staff, NPIC 25X1

ATTENTION

SUBJECT : Advanced Light Table Prototypes under Contract 25X1

1. Because of considerable instability 25X1
Contract was negotiated as a two phase program; (1) a 25X1
design phase and (2) a fabrication phase. 25X1

2. completed Phase I, the design study 25X1
portion, of Contract and has delivered two copies of the final 25X1
design study (report and drawings) to NPIC/P&DS technical 25X1
monitor.

3. This design study has been reviewed and evaluated for completeness and engineering feasibility and has been determined to be quite acceptable.

4. It is therefore requested that OL/PD proceed with negotiations for the Phase II portion of the contract for the fabrication and delivery of the subject light tables. 25X1

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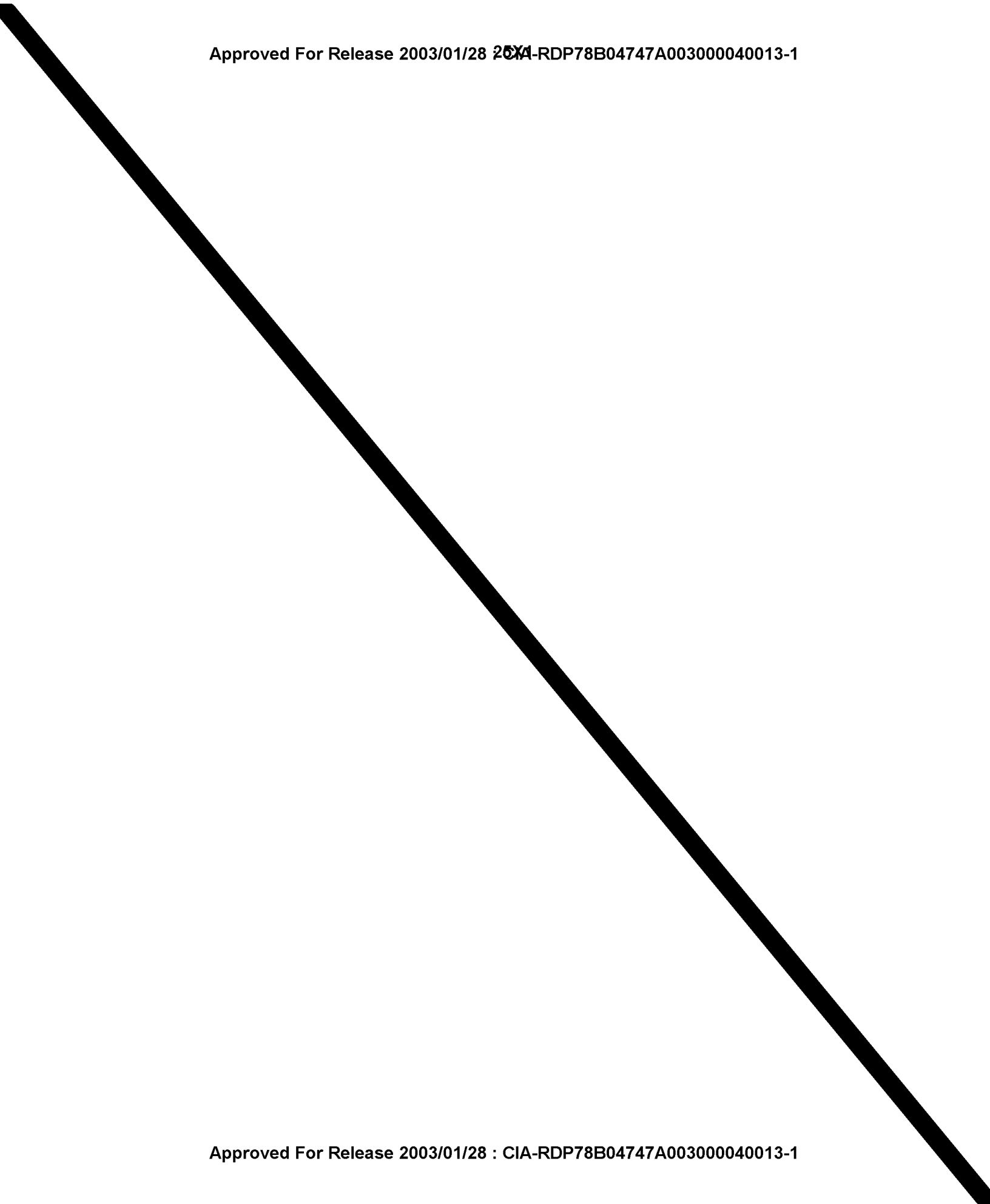
NPIC/P&DS 12 Mar 1965 25X1



SECRET
(When Filled In)

REVISED

R & D CATALOG FORM

23 August 1965

1. PROJECT TITLE/CODE NAME	2. SHORT PROJECT DESCRIPTION
Advanced Light Table Prototypes	The development of three, different, advanced film-viewing light tables.

5. CLASS OF CONTRACTOR	6. TYPE OF CONTRACT
Manufacturer	CPIF

7. FUNDS		8. REQUISITION NO.	9. BUDGET PROJECT NO.
FY 1965		NA	
FY 1966		10. EFFECTIVE CONTRACT DATE (Begin - end)	
FY 19		1 Sept - 1 Dec 1965	

12. RESPONSIBLE DIRECTORATE/OFFICE/PROJECT OFFICER TELEPHONE EXTENSION

DDI/NPIC/ P&DS

13. REQUIREMENT/AUTHORITY The present 9" x 18" format "tilt-top" and 9" x 40" "motion-carriage" light tables are two of the most heavily used pieces of equipment not only at NPIC but also throughout the Intelligence Community. These units, while functional, are generally awkward and uncomfortable to use because they require (contd

14. TYPE OF WORK TO BE DONE This project is one part of a parallel engineering development effort and is directed toward the design, fabrication, test and evaluation of three different, prototype light tables.

15. CATEGORIES OF EFFORT

MAJOR CATEGORY	SUB-CATEGORIES
Viewers and Other Interpretation Equipment	Light Sources

16. END ITEM OR SERVICES FROM THIS CONTRACT/IMPROVEMENT OVER CURRENT SYSTEM, EQUIPMENT, ETC. The results of this development will be three prototype, advanced-concept, film-viewing light tables -- three different tables. The three types are: (1) An 11" x 18" format tilt-top unit, (2) an 11" x 40" format unit with translating microscope carriage, and (3) an 11" x 40" unit with translating microscope (contd)

17. SUPPORTING OR RELATED CONTRACTS (Agency & Other)/COORDINATION The best of numerous suggestions, gathered from many different NPIC analysts, were incorporated into the development objectives upon which this project was based and which are reflected in the contractors' technical proposals. By virtue of contacts throughout industry and the Intelligence Community, it is concluded that no equivalent devices are (contd)

18. DESCRIPTION OF INTELLIGENCE REQUIREMENT AND DETAILED TECHNICAL DESCRIPTION OF PROJECT (Continue on additional page if required) Currently, film-viewing light tables introduce high fatigue factors and inefficiency into the photo interpretation operation. Since the highly skilled photo interpreter is the most important single element in the P.I. process, equipment which has not been engineered for maximum efficiency and comfort carries penalties we cannot afford. Two of the proposed prototype table-types are units designed to replace present equipment. The third table is designed in anticipation of solving future problems. As the resolution of film materials increases, they must be viewed with higher and higher magnifications; consequently, there is a (contd)

19. APPROVED BY AND DATE

OFFICE	DEPUTY DIRECTOR	DDCI

R & D CATALOG FORM (Continued).....

13. The viewer to sit in an unnatural position and have controls which require uncomfortable hand or arm movements.

They are difficult to load and have poor stability; furthermore, the light sources do not provide adequate light intensity and are subject to "flickering" when dimmed.

This development meets the requirements of NPIC/PAG and CIA/IAD

16. carriage and integral, tracking, high-intensity light sources. Monthly progress reports and three instruction manuals will be provided

This project should result in sophisticated (but reliable) prototype light tables, built with proper attention to human engineering, and which are to be evaluated under actual operational conditions by photo interpreters. The desired final product of this development program would be prototypes which could be further refined and then manufactured on a production basis to replace current operational models.

17. currently in existence.

18. point at which general diffused illumination from the light table becomes inadequate and high-intensity light sources are required. Since the microscope translates, these high intensity sources must track the objective lenses. The third table-type is designed to accomplish this.

Technical Specifications

A. Advanced Tilt-Top Light Table

The unit will provide the following advanced features:

1. Handling (up to) 500' single rolls of 9½", 5" or 70mm film, or dual rolls of 5" or 70mm film concurrently.

2. Increased illumination up to 1800 foot lamberts, continuously variable from 15% to 100% to full intensity, without visible evidence of "flicker".

3. Adjustable sub-stage shades to block out all of the illuminated surface not actually covered by film.

R & D CATALOG FORM Continued...

18. Technical Specifications (Continued)

4. A unique, completely reliable film drive that will permit bi-directional film motion, controllable from either end: i.e., it will permit both winding and unwinding with the same crank at one end of the table. In addition, the drive will incorporate a two-speed feature to facilitate high-speed slewing. Specifically, it is proposed to incorporate a servo motor and associated control circuitry to provide a full power assisted film transport capability. To transport the film, the operator would turn the handwheel as in the present design, however, the actual power required to rotate the film spools would be supplied by the servo, this arrangement permits a high degree of control at the handwheels while eliminating the manual power required. Switches will be provided to allow the operator to automatically slew the film without touching the handwheels.

5. Fast, positive loading and unloading mechanisms.

6. A film transport mechanism that maintains a light, constant tension to keep the film flat and in contact with the glass surface. This tension is automatically eased when the film is transported.

7. Tilt mechanisms that permit tilts of (up to) 75° on one axis and 45° on the other.

B. Advanced Film Viewing Light Table with a Translating Microscope Carriage

This unit will incorporate all of the features of the tilt-top unit except for item A7. In addition, the following features will be added:

1. An 11" x 40" illuminated area vice 11" x 18".

2. A height adjustment of 3" and a tilt adjustment 0° through 15°.

3. An advanced, precision carriage for translating microstereoscopes or stereomicroscopes in both X and Y over an area of 10" by 35" of the total illuminated format. Adapters are provided for mounting the [redacted] microscope.

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R&D CATALOG FORM Continued ...

18. 4. A fine micrometer X- and Y-microscope motion over ± 2cm in travel, which can be implemented once the main translational carriages have been locked in position. This precision motion is graduated and accurate to .001mm plus .01% of the total distance being measured.

C. Advanced Film-Viewing Light Table with Translating Microscope Carriage and High-Intensity, Tracking Light Source

This unit is basically the same as item B above, with the following exception:

1. Two high-intensity, condenser-type light sources are provided which are positioned between the general illumination source and the surface glass plate and are independently adjustable so that they can be adjusted beneath the objective lenses of the microscope. When the microscope and microscope carriage are translated, the high-intensity light sources will track the objectives.

D. The modifications described in paragraph A 4. above will be incorporated in all three light tables. This constitutes a change of scope requiring [redacted] additional funds.

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NOTE: Because of the importance of the items being developed, and because of the high degree of sophistication required of the film drive and film-tension mechanisms, it is technologically prudent to undertake a parallel development.

By undertaking a parallel development, we obtain two totally different approaches in design philosophy. The best design from either manufacturer for any part (components or subsystems) of each of the light tables would then be combined on the final production units at the time of manufacture [redacted]

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